



Sulfur trioxide delivery system

Description of Technology: The present invention relates to a process for the reversible sorption of sulfur trioxide on a recyclable sorbent, and to the composition of sorbent and sulfur trioxide.

Patent Listing:

1. **US Patent No. 6,773,490**, Issued on August 10, 2004, "Sulfur trioxide delivery system"
<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi/nph-PTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=6,773,490.PN.&OS=PN/6,773,490&RS=PN/6,773,490>

Market Potential: Today the major uses of sulfur trioxide are in sulfonations and the manufacture of explosives. A more recent and relatively smaller volume use is in the electronics industry where very pure sulfur trioxide can be used for etching of electronics parts. Levenson and Waleh describe this application in U.S. Pat. No. 5,763,016, where exposure of the electronics parts at room temperature to 400.degree. C. to dry gaseous sulfur trioxide is used to etch organic coatings, films, and layers, including photoresists. In this application, the delivery of small quantities of pure sulfur trioxide is necessary. The electronics industry is typically not equipped to handle sulfur trioxide in bulk liquid form, or the consequences of safety incidents with bulk quantities of such a toxic and corrosive in gas or liquid form.

It is desirable to have sulfur trioxide in a safer and more easily used form, such as reversibly sorbed on a substrate that allows easy desorption at lower temperatures and thus simple delivery of the sulfur trioxide. Also, it is desirable to have the sorbed sulfur trioxide in an easily flowable form, for instance as free-flowing pellets, available in a commercial quality (typically 98% minimum) for conventional uses or in a highly purified quality for use in the electronics industry (typically 99.9%). The desorbed sulfur trioxide should be no lower in purity than the sulfur trioxide feedstock. Furthermore, it is desirable for the sorbent to be reusable. The present invention provides such a sorbent and a process for its use.

Benefits:

- Easier desorption at lower temperatures
- Easily flowable form
- Reusable sorbent

Applications:

- Explosives
- Etching electronic parts

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